Use Attainability Analysis

for

WBID 527 Cottonwood Creek

Submitted by
BWR

June 1, 2007

Submitted to:
Missouri Department of Natural Resources
Division of Environmental Quality
Water Protection Program

Field Data Sheets for Recreational Use Stream Surveys

Data Sheet A - Water Body Identification

I. Water Body Information (For water body being surveyed)

Water Body Name (from USGS 7.5' quad):	Co Honwood Creek
Missouri Water Body Identification (WBID) Number:	527
8-digit HUC: 10280101	County: CALDWELL
Upstream Legal Description (from Table H):	mouth
Downstream Legal Description(from Table H):	5,56N, 27W
Number of sites evaluated	3
List all sites numbers, listed consequently upstream to downstream:	1, 2, 3

Site Locations Map(s): Attach a map of entire segment with assessment sites clearly labeled. Mark any other items that may be of interest.

II. Subegmentation (fill this section out only in cases where subesgmentation is being proposed)

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION IN METERS)			
Upstream Coordinates: UTM X	Y	Downstream Coordinates: UTM X	Y

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± _____ Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

III. Discharger Facility Information (list all permitted dischargers on the stream)

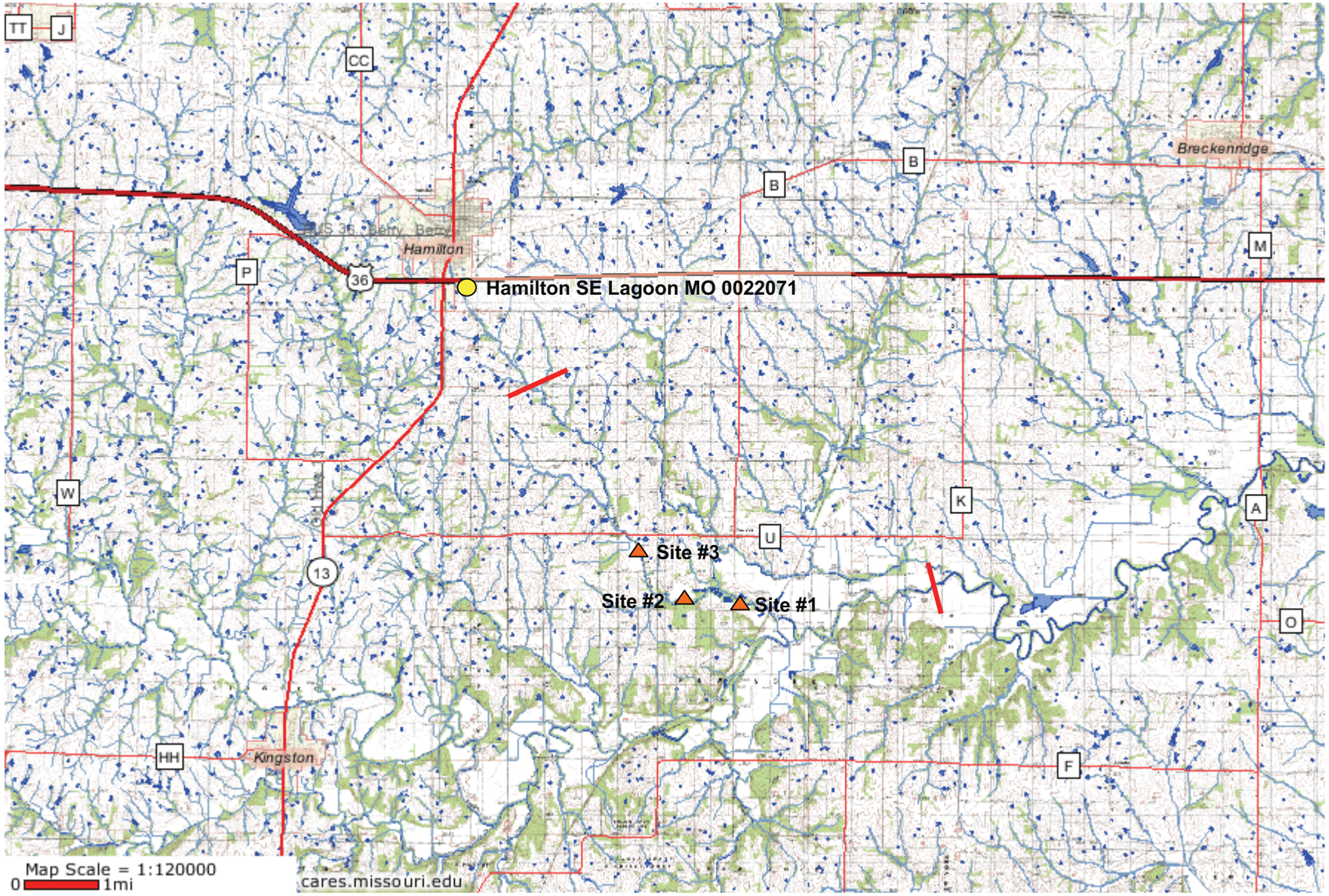
Discharger Facility Name(s):	Hamilton SE Lagoon
Discharger Permit Number(s):	MO 0022071

IV. UAA Surveyor (please print legibly)

Name of Surveyor Mark Griffith	Telephone Number: ~~(816) 505-2090~~ (913) 583-3883
Organization/Employer: ~~Burns~~ EAE	
Position: Environmental Scientist	

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Signed: John T Cosgriff **Date:** 5-21-07



BWR
Right in the Center

Cottonwood Creek
WBID #527

N

WBID# 521
Site# 1

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5-21-07 1655	Site Location Description (e.g., road crossing): Bridge on New York Rd.
Personnel (Data Collectors): MG/JC	
Current Weather Conditions: Sunny mild	Facility Name: Hamilton SE Lagoon (downstream)
Weather Conditions for Past 10 days: Sunny warm	Permit Number: MO 0022071
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 39,67329 Y: 093,92699 between sites 1 & 2

HORIZONTAL COLLECTION METHOD (indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± _____ Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☒ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☒ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% CHANNEL FEATURES
RUN = 90%
RIFFLE = 10%
Pool = Ø

current obvious in shallow areas

*** Page Two – Data Sheet B for WBID #** 521 : SITE #1
Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	20	60	10	10	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

None

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments () to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Mark Griffin Date of Survey: 5-21-07

Organization: BWR/EA Position: Ecologist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 1

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A	1	wetted width	0.1 (.1)			1 Channel Feature:	
	2	5.0 m	0.4			2 Run	
Start on Left	3		0.7			3	
	4	measurements	1.0			4 Dissolved Oxygen	
	5	.5 m	1.0			5	
	6	apart	1.0			6 7.5 ppm	
	7		.9			7 ___ %	
	8		.8			8	
	9		.4			9	
	10		.1			10	
						11	
Transect B	1	wetted width				12 Channel Feature:	
	2	4.0 m	.1 (.1)			13 RUN	
	3		.3			14	
	4	measurements	.5			15 Dissolved Oxygen:	
	5	.4 m	.6			16	
	6	apart	.7	7.0		17 7.0 ppm	
	7		.6			18 ___ %	
	9		.4			19	
	9		.2			20	
	10		.1			21	
						22	
Transect C	1	wetted width	.1 (.1)			23 Channel Feature:	
	2	3.1 m	.2			24 RUN	
	3		.3			25	
	4	measurements	.3			26 Dissolved Oxygen	
	5	.3 m	.3	DO		.	
	6	apart	.3			. 7.0 ppm	
	7		.3			. ___ %	
	8		.2			n	
	9		.1				
	10		<.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Josh T Cass **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 1

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D	1	wetted width	.1 (.1)			1 Channel Feature:	
	2	2.2 m	.2			2 RUN	
	3		.3			3	
	4	measurements	.4			4 Dissolved Oxygen	
	5	.2 m	.4			5	
	6	apart	.4	DO		6 7.0 ppm	
	7		.4			7 ___ %	
	8		.3			8	
	9		.2			9	
	10		.1			10	
						11	
Transect E	1	wetted width	.1 (.8)			12 Channel Feature:	
	2	1.9 m	.1			13 RUN	
	3	.05	.1			14	
	4	measurements	.1			15 Dissolved Oxygen:	
	5	___ m	.1			16	
	6	apart	.1			17 7.0 ppm	
	7		.2	DO		18 ___ %	
	9		.2			19	
	9		.1			20	
	10		<.1			21	
						22	
Transect F	1	wetted width	.1 (.2)			23 Channel Feature:	
	2	2.0 m	.1	DO		24 RUN	
	3		.1			25	
	4	measurements	.1			26 Dissolved Oxygen	
	5	.2 m	.1			.	
	6	apart	.1			. 7.0 ppm	
	7		<.1			. ___ %	
	8		<.1			n	
	9		<.1				
	10		<.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Josh T Cosy **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.1 (.5)			1 Channel Feature:	
2	2.3 m	.1			2	riffle
3		.1	DO		3	
4	measurements	.1			4 Dissolved Oxygen	
5	.3 m	<.1	DO		5	
6	apart	<.1			6 7.0	ppm
7		<.1			7 ____	%
8		<.1			8	
9		<.1			9	
10		<.1			10	
					11	
Transect H 1	wetted width	.1 (.2)			12 Channel Feature:	
2	4.4 m	.2			13 RUN	
3		.2	DO		14	
4	measurements	.1			15 Dissolved Oxygen:	
5	.4 m	<.1			16	
6	apart	<.1			17 6.9	ppm
7		<.1			18 ____	%
8		<.1			19	
9		.1			20	
10		.1			21	
					22	
Transect I 1	wetted width	.1 (.1)	DO		23 Channel Feature:	
2	4.2 m	.1			24 RUN	
3		.1			25	
4	measurements	.2			26 Dissolved Oxygen	
5	.4 m	.2			.	
6	apart	.1			. 6.9	ppm
7		.1			. ____	%
8		.1			n	
9		.1				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Josh T Cass **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 1

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J 1	wetted width	.1 (.1)	Sand +		1 Channel Feature:	
2	4.4 m	.1	Some Silt		2 Run	
3		.2	Substrate		3	
4	measurements	.1			4 Dissolved Oxygen	
5	.4 m	.2	DO		5	
6	apart	.1	20.9°C		6 6.5 ppm	
7		.1			7 ____ %	
8		.1			8	
9		.2			9	
10		.1			10	
					11	
Transect K 1	wetted width	.1 (.1)			12 Channel Feature:	
2	5.0 m	.2			13 Run	
3		.2	DO		14	
4	measurements	.1			15 Dissolved Oxygen:	
5	.5 m	.2			16	
6	apart	.1			17 6.5 ppm	
7		.1			18 ____ %	
8		.2			19	
9		.1			20	
10		.1			21	
					22	
Transect 1	wetted width				23 Channel Feature:	
2	____ m				24	
3					25	
4	measurements				26 Dissolved Oxygen	
5	____ m				.	
6	apart				. ____ ppm	
7					. ____ %	
8					n	
9						
10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: John T Cary **Date:** 5-21-07

Organization: BWR Position: Field Team Member

WBID# 521
Site# 2

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5-21-07 1740	Site Location Description (e.g., road crossing): upstream of Bridge on New York St.
Personnel (Data Collectors): MG / JC	
Current Weather Conditions: Sunny Mild	Facility Name: — Hamilton SE Lagoon
Weather Conditions for Past 10 days: Sunny Mild	Permit Number: — MO 0022071
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: 39.67329 Y: 093, 92699

HORIZONTAL COLLECTION METHOD (Indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± _____ Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☒ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☒ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% CHANNEL FEATURES
Run = 60%
Riffle = 10%
Pool = 30%

*** Page Two – Data Sheet B for WBID #** 521 : SITE # 2

Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Current Obvious in Shallow Areas

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

% Cobble	% Gravel	% Sand	% Silt	% Mud/Clay	% Bedrock
—	20	50	20	10	—

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

None

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments () to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: _____ Date of Survey: 5-21-07

Organization: BWR/EAE Position: Ecologist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 2

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A	1	wetted width	.1 (0)	20.7° C		1 Channel Feature:	
Start on Right	2	3.9 m	.3			2 Pool	
	3		.4			3	
	4	measurements	.5	00		4 Dissolved Oxygen	
	5	.4 m	.5			5	
	6	apart	.3			6 5.9 ppm %	
	7		.2			7	
	8		.1			8	
	9		.1			9	
	10		.1			10	
						11	
Transect B	1	wetted width	.1 (.1)			12 Channel Feature:	
	2	2.0 m	.2			13 RUN	
	3		.3	00		14	
	4	measurements	.2			15 Dissolved Oxygen:	
	5	.2 m	.1			16	
	6	apart	.1			17 6.1 ppm %	
	7		.1			18	
	8		<.1			19	
	9		<.1			20	
	10		<.1			21	
						22	
Transect C	1	wetted width	.1 (.1)			23 Channel Feature:	
	2	5.0 m	.3			24 ~~RUN~~	
	3		.5			25 POOL	
	4	measurements	.6	00		26 Dissolved Oxygen	
	5	.5 m	.6			.	
	6	apart	.6			. 5.9 ppm %	
	7		.6			.	
	8		.4			.	
	9		.2			n	
	10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Josh T Corey **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.1 (.4)			1 Channel Feature:	
2	2.2 m	.1			2 RUN	
3		.2			3	
4	measurements	.2	DO		4 Dissolved Oxygen	
5	.2 m	.2			5	
6	apart	.1			6 6.10 ppm	
7		.1			7 ____ %	
8		.1			8	
9		.1			9	
10		.1			10	
					11	
Transect E 1	wetted width	.1 (.7)			12 Channel Feature:	
2	3.0 m	.1			13 RUN	
3		.2			14	
4	measurements	.2			15 Dissolved Oxygen:	
5	.2 m	.2	DO		16	
6	apart	.2			17 6.0 ppm	
7		.2			18 ____ %	
9		.2			19	
9		.2			20	
10		.1			21	
					22	
Transect F 1	wetted width	.1 (0)			23 Channel Feature:	
2	4.4 m	.2			24 RUN	
3		.2			25	
4	measurements	.2	DO		26 Dissolved Oxygen	
5	.4 m	.1			.	
6	apart	.1			. 5.8 ppm	
7		.1			. ____ %	
8		.1			.	
9		.1			n	
10		< .1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: John T Case **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 2

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.1 (.1)			1 Channel Feature:	
2	3.3 m	.2			2 RUN	
3		.3			3	
4	measurements	.4	DO		4 Dissolved Oxygen	
5	.3 m	.4			5	
6	apart	.3			6 5.7 ppm	
7		.2			7 ___ %	
8		.2			8	
9		.1			9	
10		.1			10	
		.			11	
Transect H 1	wetted width	0.1 (.2)			12 Channel Feature:	
2	4.5 m	.3			13 POOL	
3		.4			14	
4	measurements	.7			15 Dissolved Oxygen:	
5	.4 m	.7			16	
6	apart	.5	DO 5.7		17 5.7 ppm	
7		.4			18 ___ %	
9		.3			19	
9		.2			20	
10		.1			21	
					22	
Transect I 1	wetted width	.1(.1)			23 Channel Feature:	
2	2.6 m	.1			24 RUN	
3		.2			25	
4	measurements	.2			26 Dissolved Oxygen	
5	.2 m	.2	DO		.	
6	apart	.1			. 5.9 ppm	
7		.1			. ___ %	
8		.1			n	
9		.1				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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Signed: Josh T Case **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 2

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J	1	wetted width	.1 (.1)			1 Channel Feature:	
	2	4.2 m	.2			2 RUN	
	3		.4			3	
	4	measurements	.5			4 Dissolved Oxygen	
	5	.4 m	.4	00		5	
	6	apart	.5			6 5.7 ppm	
	7		.5			7 ____ %	
	8		.5			8	
	9		.3			9	
	10		.1			10	
						11	
Transect K	1	wetted width	.1 (.3)			12 Channel Feature:	
	2	2.0 m	.1			13 RUN	
	3		.2			14	
	4	measurements	.2	00		15 Dissolved Oxygen:	
	5	.2 m	.2			16	
	6	apart	.2			17 5.8 ppm	
	7		.2			18 ____ %	
	8		.1			19	
	9		.1			20	
	10		.1			21	
						22	
Transect	1	wetted width				23 Channel Feature:	
	2	____ m				24	
	3					25	
	4	measurements				26 Dissolved Oxygen	
	5	____ m				.	
	6	apart				. ____ ppm	
	7					. ____ %	
	8					n	
	9						
	10						

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Josh T Cary **Date:** 5-21-07

Organization: BWR Position: Field Team Member

WBID# 521
Site# 3

Field Data Sheets for Recreational Use Stream Surveys
Data Sheet B - Site Characterization
(must be completed for each site)

Date & Time: 5/21/07 1830	Site Location Description (e.g., road crossing): upstream of Pleasant Ridge Rd Bridge
Personnel (Data Collectors): MG/JC	
Current Weather Conditions: Sunny mild	Facility Name: Hamilton SE Lagoon
Weather Conditions for Past 10 days: Sunny Mild	Permit Number: MO 0022071
Drought Conditions?: No drought ☒; Phase I ☐; Phase II ☐; Phase III ☐; Phase IV ☐; Unknown ☐	

Site Locations:

LOCATION COORDINATES (UNIVERSAL TRANSVERSE MERCATOR PROJECTION, IN METERS)

Site GPS Coordinates: UTM X: no readings Y:

HORIZONTAL COLLECTION METHOD (indicate the method used to determine the locational data.)

Global Positioning System (GPS)		Interpolation	
Static Mode		Topographic Map or DRG	
Dynamic Mode (Kinematic)		Aerial Photograph or DOQQ	
Precise Positioning Service		Satellite Imagery	
Signal Averaging		Interpolation Other	
Real Time Differential Processing			

HORIZONTAL ACCURACY ESTIMATE

GPS Data Quality		Interpolation Data Quality
FOM	± _____ Meters	Source Map Scale: 1:24,000 1:100,000 Other _____
EPE	± _____ Feet or ± _____ Meters	± _____ Feet or ± _____ Meters
PDOP		

Photos:

Upstream Photos		Downstream Photos		Other Photos	
Photo ID#	Photo Purpose	Photo ID#	Photo Purpose	Photo ID#	Photo Purpose

Uses Observed*: (Uses actually observed at time of survey.)

☐ Swimming	☐ Skin diving	☐ SCUBA diving	☐ Tubing	☐ Water skiing
☐ Wind surfing	☐ Kayaking	☐ Boating	☐ Wading	☐ Rafting
☐ Hunting	☐ Trapping	☐ Fishing	☒ None of the above	☐ Other:

Describe: (Include number of individuals recreating, photo-documentation of evidence of recreational uses, etc. Use *Data Sheet D- Recreational Use Interview* when conducting interviews.)

Surrounding Conditions*: (Mark all that promote or impede recreational uses. Attach photos of evidence or unusual items of interest.)

☐ City/county parks	☐ Playgrounds	☐ MDC conservation lands	☐ Urban areas	☐ Campgrounds
☐ Boating accesses	☐ State parks	☐ National forests	☐ Nature trails	☐ Stairs/walkway
☐ No trespass sign	☐ Fence	☐ Steep slopes	☒ None of the above	☐ Other:

Comments:

Indications of Human Use*: (attach photos)

☒ Roads	☐ Rope swings	☐ Foot paths/prints	☐ Dock/platform	☐ Livestock Watering	☐ RV / ATV Tracks
☐ Camping Sites		☐ Fire pit/ring	☐ NPDES Discharge	☐ Fishing Tackle	☐ Other:

Comments:

% CHANNEL FEATURES

Run = 90%
Riffle = 10%
Pool = 0

current obvious in shallow areas

*** Page Two – Data Sheet B for WBID #** 521 : Site # 3

Stream Morphology:

Upstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Downstream View's Physical Dimensions: Is there any water present at this view? ☐ Yes ☐ No

If so, is there an obvious current? ☐ Yes ☐ No

Select one of the following channel features:

Channel Feature	Distance from access (m)	Width (m)	Length (m)	Median Depth (m)	Max. Depth (m)
RIFFLE					
RUN					
POOL					

Substrate*: (These values should add up to 100%.)

20 % Cobble	30 % Gravel	30 % Sand	20 % Silt	% Mud/Clay	% Bedrock

Aquatic Vegetation*: (Note amount of vegetation or algal growth at the assessment site)

None

Water Characteristics*: (Mark all that apply.)

Odor:	☐ Sewage	☐ Musky	☐ Chemical	☒ None	☐ Other:
Color:	☒ Clear	☐ Green	☐ Gray	☐ Milky	☐ Other:
Bottom Deposit:	☐ Sludge	☐ Solids	☐ Fine sediments	☒ None	☐ Other:
Surface Deposit:	☐ Oil	☐ Scum	☐ Foam	☒ None	☐ Other:

Comments: Please attach any additional comments () to this form.

*This information is not to be used solely for removal of a recreational use designation but rather is to provide a more comprehensive understanding of water conditions. Consequently, this information is not intended to directly influence a decision on the recreation use analysis but may point to conditions that need further analysis or that effect another use.

Please verify that you have completed all sections, checked all applicable boxes and that everything is complete.

Surveyor's Signature: Mark Griffith Date of Survey: 5-21-07

Organization: BWR / EAE Position: Ecologist

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect A 1	wetted width	.1 (.1)	4.0m Bar		1 Channel Feature:	
2	9.6 m	0	#2.0m Bar		2 RUN	
Start on 3		0			3	
4	measurements	0			4 Dissolved Oxygen	
5	.9 m	.1			5	
Right 6	apart	0			6 10.0 ppm	
7		0			7 ____ %	
8		0			8	
9		.1	DO		9	
10		.1			10	
					11	
Transect B 1	wetted width	.1 (.3)			12 Channel Feature:	
2	9.8 m	.1	6.5mBar		13 Riffle	
3		<.1	No		14	
4	measurements	0			15 Dissolved Oxygen:	
5	.9 m	0			16	
6	apart	0			17 9.3 ppm	
7		0			18 ____ %	
9		0			19	
9		<.1			20	
10		.1			21	
					22	
Transect C 1	wetted width	.1			23 Channel Feature:	
2	7.6 m	.1			24 RUN	
3		.1			25	
4	measurements	.1			26 Dissolved Oxygen	
5	.7 m	.1	DO		.	
6	apart	.1			. 9.7 ppm	
7		.1			. ____ %	
8		.1			n	
9		.1				
10		.1				

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Josh T Casey **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect D 1	wetted width	.1 (.5)	Silt, Sand,		1 Channel Feature:	
2	6.1 m	.2	Cobble +		2 RUN	
3		.2	Gravel		3	
4	measurements	.3			4 Dissolved Oxygen	
5	.6 m	.5			5	
6	apart	.5	DS		6 9.9	ppm
7		.5			7 ____	%
8		.4			8	
9		.2			9	
10		.1			10	
					11	
ansect E 1	wetted width	.1 (.1)			12 Channel Feature:	
2	8.5 m	.3			13 RUN	
3		.4			14	
4	measurements	.3	DO		15 Dissolved Oxygen:	
5	.8 m	.4			16	
6	apart	.4			17 9.6	ppm
7		.4			18 ____	%
9		.3			19	
9		.4			20	
10		.3			21	
					22	
ransect F 1	wetted width	.1 (.1)			23 Channel Feature:	
2	7.8 m	.2			24 RUN	
3		.3			25	
4	measurements	.3	DO		26 Dissolved Oxygen	
5	.7 m	.2			.	
6	apart	.2			. 9.1	ppm
7		.1			. ____	%
8		.1			n	
9		.1				
10		.1				

Start from Right

If there is an odd number of entries find middle rank [(n+1)/2]. The corresponding sorted value depth to the middle rank is the median depth.
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Signed: John T Cox **Date:** 5-21-07

Organization: BWR Position: Field Team Members

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 3

	Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect G 1	wetted width	.1 (.1)			1 Channel Feature:	
2	5.7 m	.2			2 RUN	
3		.2			3	
4	measurements	.5	DO		4 Dissolved Oxygen	
5	.5 m	.5			5	
6	apart	.4			6 9.1 ppm	
7		.3			7 ___ %	
8		.2			8	
9		.1			9	
10		<.1			10	
					11	
Transect H 1	wetted width	.3 (0)			12 Channel Feature:	
2	3.1 m	.4			13 RUN	
3		.4			14	
4	measurements	.3			15 Dissolved Oxygen:	
5	.5 m	.3			16	
6	apart	~~.3~~ .2	DO		17 9.4 ppm	
7		.2			18 ___ %	
8		.1			19	
9		.1			20	
10		<.1			21	
					22	
Transect I 1	wetted width	.1 (0)			23 Channel Feature:	
2	5.4 m	.2			24 RUN	
3		.1			25	
4	measurements	.1	DO		26 Dissolved Oxygen	
5	.5 m	.1			.	
6	apart	.1			. 9.3 ppm	
7		.1			. ___ %	
8		<.1			n	
9		.1				
10		.1				

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I, the undersigned, hereby affirm to the best of my knowledge, that all information reported on this UAA datasheet is true and accurate.

Signed: Josh T Cox **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Data Sheet C – Cross-Sectional Depth Measurements (for estimation of median depth)

WBID # 521 Site # 3

		Distance from Stream edge	Depth	Rank		Assigned Rank	Sorted depth
Transect J	1	wetted width	.1 (.5)			1 Channel Feature:	
	2	4.2 m	.1			2 RUN	
	3		.2			3	
	4	measurements	.2			4 Dissolved Oxygen	
	5	.4 m	.2			5	
	6	apart	.3	DO		6 9.1 ppm	
	7		.3			7 ____ %	
	8		.3			8	
	9		.2			9	
	10		.1			10	
						11	
Transect K	1	wetted width	<.1			12 Channel Feature:	
	2	1.7 m	.1			13	
	3		.1			14	
	4	measurements	.1			15 Dissolved Oxygen:	
	5	.1 m	.1			16 ~~RUN~~ RIFFLE	
	6	apart	<.1			17 9.2 ppm	
	7		<.1			18 ____ %	
	9		<.1			19	
	9		<.1			20	
	10		<.1			21	
						22	
Transect	1	wetted width				23 Channel Feature:	
	2	____ m				24	
	3					25	
	4	measurements				26 Dissolved Oxygen	
	5	____ m				.	
	6	apart				. ____ ppm	
	7					. ____ %	
	8					n	
	9						
	10						

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If there is an even number of entries, the median depth corresponds to the arithmetic average of the two depth values surrounding the middle rank.

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Signed: Josh T Cass **Date:** 5-21-07

Organization: BWR Position: Field Team Member

Upstream (Site 1) of Cottonwood Creek

Downstream (Site 1) of Cottonwood Creek

Upstream (Site 2) of Cottonwood Creek

Downstream (Site 2) of Cottonwood Creek

Upstream (Site 3) of Cottonwood Creek

Downstream (Site 3) of Cottonwood Creek

Supplemental photo of Cottonwood Creek

Supplemental photo of Cottonwood Creek